

CLAIMS

1. A method of regulating the nonspecific adsorption of a molecule to a solid phase surface, comprising regulating the hydrophobic property of the solid phase surface in a solid phase carrier.
2. A method of suppressing the nonspecific interaction between a molecule A and/or a solid phase carrier and a molecule other than a molecule B that specifically interacts with said molecule A, comprising conducting a treatment to reduce the hydrophobic property of the solid phase surface in the solid phase carrier, in a process to immobilize the molecule A onto the solid phase carrier and analyze the specific interaction between the molecule A and the molecule B on the solid phase.
3. A method of suppressing the nonspecific interaction between a molecule A and/or a solid phase carrier and a molecule other than a molecule B that specifically interacts with said molecule A, comprising conducting a treatment to reduce the hydrophobic property of the solid phase surface in the solid phase carrier, in a process to immobilize the molecule A onto the solid phase carrier and select the molecule B using the specific interaction between the molecule A and the molecule B on the solid phase.
4. The method of claim 2 or 3, wherein the combination of the molecule A and the molecule B is any of a small compound and a small compound, a small compound and a large compound, and a large compound and a large compound.
5. The method of claim 2 or 3, wherein the combination of the molecule A and the molecule B is a small compound and a large compound or a large compound and a large compound.

6. The method of claim 2 or 3, wherein the treatment to reduce the hydrophobic property of the solid phase surface in the solid phase carrier is to introduce, at the time of immobilization of the molecule A onto the solid phase carrier, a hydrophilic spacer therebetween.

7. The method of claim 6, wherein the hydrophilic spacer has at least any of the following characteristics while in a state bound to the solid phase carrier and the molecule A:

- (i) the number of hydrogen bond acceptor is 6 or more,
- (ii) the number of hydrogen bond donor is 5 or more,
- (iii) the total number of hydrogen bond acceptor and hydrogen bond donor is 9 or more.

8. The method of claim 7, wherein said hydrophilic spacer further has one or more carbonyl groups in the molecule thereof.

9 The method of claim 7 or 8, further characterized in that said hydrophilic spacer does not have a functional group that becomes positively or negatively charged in an aqueous solution.

10. A method of immobilizing a molecule A onto a solid phase carrier, and analyzing the specific interaction between the molecule A and a molecule B that specifically interacts with said molecule A, on the solid phase, comprising suppressing the nonspecific interaction between the molecule A and/or the solid phase carrier and a molecule other than the molecule B by conducting a treatment to reduce the hydrophobic property of the solid phase surface in the solid phase carrier.

11. A method of immobilizing a molecule A onto a solid phase carrier, and selecting a molecule B that specifically interacts with said molecule A using the specific interaction between the

molecule A and the molecule B on the solid phase, comprising suppressing the nonspecific interaction between the molecule A and/or the solid phase carrier and a molecule other than the molecule B by conducting a treatment to reduce the hydrophobic
5 property of the solid phase surface in the solid phase carrier.

12. The method of claim 10 or 11, wherein the combination of the molecule A and the molecule B is any of a small compound and a small compound, a small compound and a large compound,
10 and a large compound and a large compound.

13. The method of claim 10 or 11, wherein the combination of the molecule A and the molecule B is a small compound and a large compound or a large compound and a large compound.

15

14. The method of claim 10 or 11, wherein the treatment to reduce the hydrophobic property of the solid phase surface in the solid phase carrier is to introduce, at the time of immobilization of the molecule A onto the solid phase carrier,
20 a hydrophilic spacer therebetween.

15. The method of claim 14, wherein the hydrophilic spacer has at least any of the following characteristics while in a state bound to the solid phase carrier and the molecule A:

- 25 (i) the number of hydrogen bond acceptor is 6 or more,
(ii) the number of hydrogen bond donor is 5 or more,
(iii) the total number of hydrogen bond acceptor and hydrogen bond donor is 9 or more.

30 16. The method of claim 15, wherein said hydrophilic spacer further has one or more carbonyl groups in the molecule thereof.

17. The method of claim 15 or 16, further characterized in that said hydrophilic spacer does not have a functional group that

becomes positively or negatively charged in an aqueous solution.

18. A screening method for a molecule B that exhibits a specific interaction with a molecule A, comprising at least the following steps:

(i) immobilizing the molecule A onto a solid phase carrier via a hydrophilic spacer,

(ii) contacting a sample that contains or does not contain the molecule B with the solid phase carrier with the molecule A

immobilized thereon obtained in (i) above,

(iii) identifying and analyzing a molecule that has exhibited or has not exhibited a specific interaction with the molecule A, and

(iv) judging a molecule that exhibits a specific interaction with the molecule A as the molecule B on the basis of the analytical results obtained in (iii) above.

19. The method of claim 18, wherein the combination of the molecule A and the molecule B is any of a small compound and a small compound, a small compound and a large compound, and a large compound and a large compound.

20. The method of claim 18, wherein the combination of the molecule A and the molecule B is a small compound and a large compound or a large compound and a large compound.

21. The method of claim 18, wherein the hydrophilic spacer has at least any of the following characteristics while in a state bound to the solid phase carrier and the molecule A:

(i) the number of hydrogen bond acceptor is 6 or more,

(ii) the number of hydrogen bond donor is 5 or more,

(iii) the total number of hydrogen bond acceptor and hydrogen bond donor is 9 or more.

22. The method of claim 21, wherein said hydrophilic spacer further has one or more carbonyl groups in the molecule thereof.

23. The method of claim 21 or 22, further characterized in that said hydrophilic spacer does not have a functional group that becomes positively or negatively charged in an aqueous solution.

24. A hydrophilic spacer for reducing the hydrophobic property of the solid phase surface in a solid phase carrier, which has at least any of the following characteristics while in a state bound to the solid phase carrier and the molecule A:

- (i) the number of hydrogen bond acceptor is 6 or more,
- (ii) the number of hydrogen bond donor is 5 or more,
- (iii) the total number of hydrogen bond acceptor and hydrogen bond donor is 9 or more.

25. The hydrophilic spacer of claim 24, wherein said hydrophilic spacer further has one or more carbonyl groups in the molecule thereof.

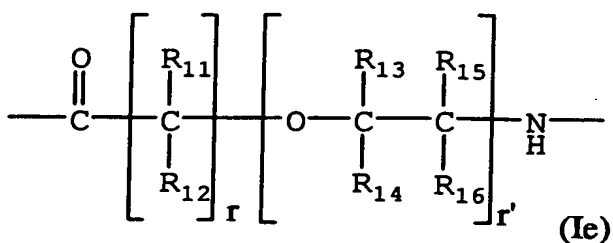
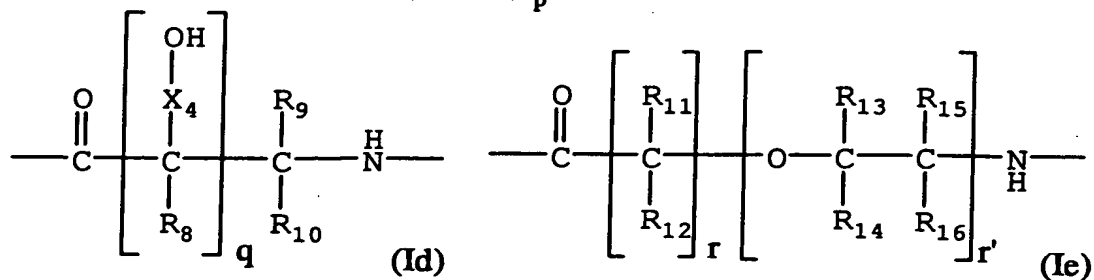
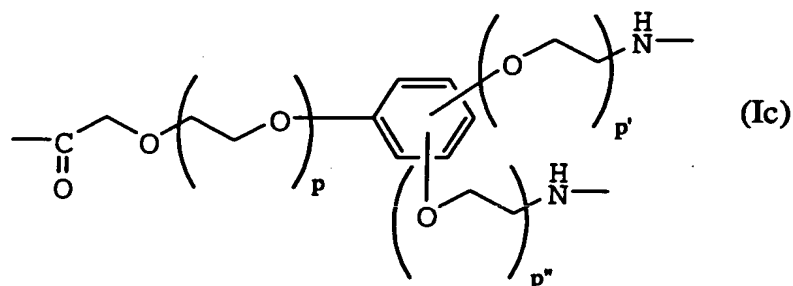
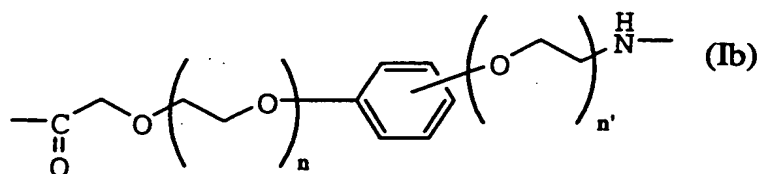
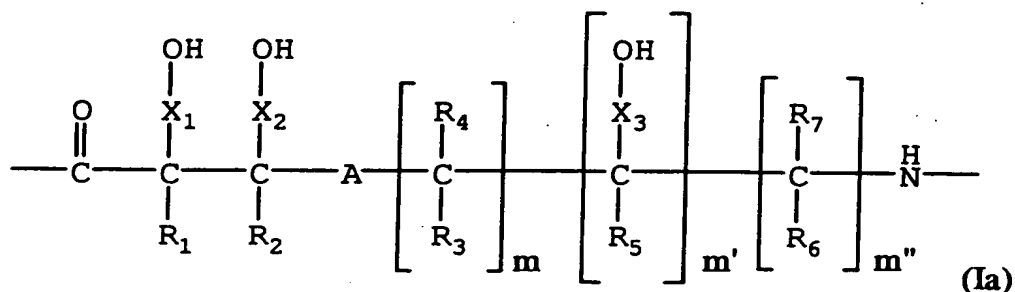
26. The hydrophilic spacer of claim 24 or 25, further characterized in that said hydrophilic spacer does not have a functional group that becomes positively or negatively charged in an aqueous solution.

27. A complex that comprises a solid phase carrier and the hydrophilic spacer of any one of claims 24-26.

28. A complex that comprises the hydrophilic spacer of any one of claims 24-26 and a molecule A.

29. A complex that comprises a solid phase carrier, the hydrophilic spacer of any one of claims 24-26, and a molecule A.

30. The hydrophilic spacer of any one of claims 24-26, which has at least one partial structure represented by any one formula selected from the group consisting of Formulas (Ia)-(Ie) below:



(In Formula (Ia),

A is an appropriate joining group,

X₁-X₃ are the same or different and each is a single bond or a methylene group that may be substituted by a linear or branched alkyl group having 1-3 carbon atoms,

R₁-R₇ are the same or different and each is a hydrogen atom, a linear or branched alkyl group having 1-3 carbon atoms, -CH₂OH or a hydroxyl group,

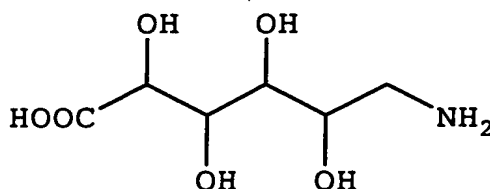
m is an integer of 0-2, m' is an integer of 0-10, m'' is an integer of 0-2,
 when a plurality of R₃-R₇ units exist, they may be the same or different, when a plurality of X₃ units exist, they may be are
 5 the same or different;
 in Formula (Ib),
 n and n' are the same or different and each is an integer of 1-1000;
 in Formula (Ic),
 10 p, p' and p'' are the same or different and each is an integer of 1-1000;
 in Formula (Id),
 X₄ is a single bond or a methylene group that may be substituted by a linear or branched alkyl group having 1-3
 15 carbon atoms,
 R₈-R₁₀ are the same or different and each is a hydrogen atom, a linear or branched alkyl group having 1-3 carbon atoms, -CH₂OH or a hydroxyl group,
 q is an integer of 1-7,
 20 when a plurality of R₈ units exist, they may be the same or different, when a plurality of X₄ units exist, they may be the same or different;
 in Formula (Ie),
 R₁₁-R₁₆ are the same or different and each is a hydrogen atom, a
 25 linear or branched alkyl group having 1-3 carbon atoms, -CH₂OH or a hydroxyl group,
 r is an integer of 1-10, r' is an integer of 1-50,
 when a plurality of R₁₁-R₁₆ units exist, they may be the same or different).
 30
 31. The hydrophilic spacer of claim 30, which has two or more partial structures represented by any one formula selected from the group consisting of Formulas (Ia)-(Ie).

32. A complex that comprises a solid phase carrier and the hydrophilic spacer of claim 30 or 31.

33. A complex that comprises the hydrophilic spacer of claim 30
5 or 31 and a molecule A.

34. A complex that comprises a solid phase carrier, the hydrophilic spacer of claim 30 or 31, and a molecule A.

10 35. A compound that has at least one partial structure represented by any one formula selected from the group consisting of Formulas (Ia)-(Ie), but excluding the following compound:



15

36. The compound of claim 35, which has two or more partial structures represented by any one formula selected from the group consisting of Formulas (Ia)-(Ie).

20 37. A compound represented by at least one formula selected from the group consisting of Formulas (IIa)-(IIe) below:

R_{1a} - R_{7a} are the same or different and each is a hydrogen atom, a linear or branched alkyl group having 1-3 carbon atoms, $-\text{CH}_2\text{OH}$ (in the formula, the hydroxyl group may be protected) or a hydroxyl group that may be protected,

5 m_1 is an integer of 0-2, m_1' is an integer of 0-10, m_1'' is an integer of 0-2,

when a plurality of R_{3a} - R_{7a} units exist, they may be the same or different, when a plurality of X_{3a} units exist, they may be the same or different;

10 in Formula (IIb),

Y_b is a hydrogen atom or an amino-group-protecting group, Z_b is a hydrogen atom or a carboxyl-group-protecting group, n_1 and n_1' are the same or different and each is an integer of 1-1000;

15 in Formula (IIc),

Y_c and Y_c' are the same or different and each is a hydrogen atom or an amino-group-protecting group, Z_c is a hydrogen atom or a carboxyl-group-protecting group, p_1 , p_1' and p_1'' are the same or different and each is an integer

20 of 1-1000;

in Formula (IIId),

Y_d is a hydrogen atom or an amino-group-protecting group, Z_d is a hydrogen atom or a carboxyl-group-protecting group, W_d is a hydrogen atom or a hydroxyl group-protecting group,

25 X_{4a} is a single bond or a methylene group that may be substituted by a linear or branched alkyl group having 1-3 carbon atoms,

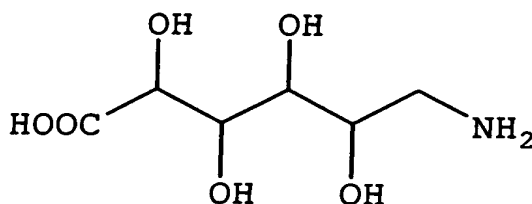
R_{8a} - R_{10a} are the same or different and each is a hydrogen atom, a linear or branched alkyl group having 1-3 carbon atoms, -

30 CH_2OH (in the formula, the hydroxyl group may be protected) or a hydroxyl group that may be protected,

q_1 is an integer of 1-7,

when a plurality of R_{8a} units exist, they may be the same or different, when a plurality of X_{4a} units exist, they may be the

- same or different;
 in Formula (IIe),
 Ye is a hydrogen atom or an amino-group-protecting group,
 Ze is a hydrogen atom or a carboxyl-group-protecting group,
 5 R_{11a}-R_{16a} are the same or different and each is a hydrogen atom,
 a linear or branched alkyl group having 1-3 carbon atoms, -
 CH₂OH (in the formula, the hydroxyl group may be protected); or
 a hydroxyl group that may be protected,
 r₁ is an integer of 1-10, r₁' is an integer of 1-50,
 10 when a plurality of R_{11a}-R_{16a} units exist, they may be the same
 or different),
 but excluding the following compound:



- 15 38. A polymer compound prepared by polymerizing a compound
 represented by at least one formula selected from the group
 consisting of Formulas (IIa)-(IIe).
 39. A complex that comprises a solid phase carrier and the
 20 compound of any one of claims 35-38.
 40. A complex that comprises the compound of any one of claims
 35-38 and a molecule A.
 25 41. A complex that comprises a solid phase carrier, the
 compound of any one of claims 35-38, and a molecule A.